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Diamond Cutting Belt

The present invention is related to a diamond cutting belt for use in cutting by sawing of structures.

It is well known to use a cutting device comprising a diamond wire to cut steel structures such as offshore platform as well as other structures offshore, nuclear power stations etc. when time has come to remove the structures for reasons such as removing ship wracks from the seabed and offshore platforms.

The diamond wires used often have comprised a core a steel rope provided with steel pearls having synthetic diamonds as the grinding tool. Securement means for the pearls are used as spacers between the pearls. The wires are interconnected to a continuous loop in a mechanical connection means or the wire as such is weaved to establish the continuous loop.

A sawing jig or apparatus is adapted to pull the diamond wire loop continuously while being forced against a structure to be cut. The loop thereby being guided around a number of wheels on the jig, and the sawing jig being continuously fed towards the structure to be cut.

The method and structure for cutting with a diamond wire will result in the steel wire being extended after passing the wheels several times. Wheels may have diameters from about 250 mm to 500 mm. The result is that the steel wire has experienced an extension which causes telescoping of the diamond pearls. This means that the lifetime of a diamond wire is as such not dependent on the abrasion of the diamonds as such, but on the extension of the diamond wire. For large structures this may mean active cutting times from between 24 and 48 hours.

The need for development of diamonds wires without the disadvantages mentioned above therefore exists with the objective to develop a diamond wire with zero extension during the lifetime of the diamonds. This is achieved with the diamond wire according to the present invention as defined by the features stated in the patent claims.

The only figure in the drawing discloses in a perspective a section of the cutting belt according to the present invention.

A rubber core 1 comprises carbon reinforcements embedded in rubber. The rubber core 1 extends through bead cores 2 provided with a number of diamond covers 6, the diamond surfaces being part of circular cylinders which as such act as the cutting medium. Between each bead core 2 are arranged rubber spacers 5.

Connecting the bead cores 2 with each other and the intervening rubber spacers 5 are a number of rubber belts 3, preferably 4 rubber belts, all comprising embedded carbon reinforcements 4. The bead cores 2 and the rubber spacers 5 comprise slots 7 and 8

through which the rubber belts 3 extend. The rubber core 1, bead cores 2, rubber spacers 5 and rubber belts 3 have a close fit and are produced as a continuous belt or wire.

A section of the cutting belt thereafter is vulcanized to an endless loop for use in a sawing jig by cutting structures. Such loops may be produced from cutting belts having diameters such as 10, 15, 20 mm or more. The length of the loops may be produced depending on the requirements for each cutting job to be performed. As such the length of the loops may be produced in lengths from 1 m to 600 m. In use the cutting belt may have a speed of from about 10 to about 25 m/sec.